



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/864,123	05/25/2001	Bernhard Alphonso Ziegner	17539	1456

7590 12/03/2003

Tyco Technology Resources
Suite 450
4550 New Linden Hill Road
Wilmington, DE 19808-2952

EXAMINER

KOBERT, RUSSELL MARC

ART UNIT	PAPER NUMBER
----------	--------------

2829

DATE MAILED: 12/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/864,123

Applicant(s)

ZIEGNER ET AL.

Examiner

Russell M Kobert

Art Unit

2829

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 May 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-43 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 23-43 is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

Art Unit: 2829

1. Applicant's arguments, see the Response, filed May 30, 2003, with respect to the rejection of claim 1 under 35 U.S.C. § 102(e) to Buffet et al has been fully considered and is persuasive. The rejection of claim 1 under 35 U.S.C. § 102(e) to Buffet et al has been withdrawn.

2. Applicant's arguments filed May 30, 2003, with respect to the rejection of claim 1 under 35 U.S.C. § 102(e) and claims 2-22 under 35 U.S.C. § 103(a) to Kosugi have been fully considered but they are not persuasive. Applicant's argument that the "conductive vias 5, 6 do not couple the conductive layer 11_m to the grounding layers 12_{m1}, 12_{m2}" is not accurate. Kosugi shows in Figure 1 at least via 5_m coupled between center conductive layer 11_m and ground layer 12_{m2} wherein a portion of the flexible organic substrate 10 is sandwiched between conductive layer 11_m and ground layer 12_{m2}. Applicant further argues that Kosugi fails to disclose or suggest a "dielectric substrate layer" disposed between first and second metallization layers and having a "plurality of conductive vias" extending therethrough and "electrically connecting" portions of the first and second metallization layers, as recited in claim 1. Firstly, the "plurality of conductive vias" are labeled as 5_m previously described supra. Secondly, with regard to the non-disclosure of the dielectric substrate layer, Kosugi stating only that the material used for "the mother substrate 10 is formed of a flexible organic material" (column 3, lines 13-14) is sufficient evidence that the substrate is a dielectric substrate layer because all flexible organic materials are dielectric materials. Further evidence that such is the case has been found in numerous articles, publications and

patents describing dielectric materials made of organic materials. Examples of such can be found in Patent Number 3,596,228 to Reed, Jr. et al which states "Dielectric membrane 22 is desirably a flexible organic material" (see column 5, lines 10-11); and in Patent Number 5,879,787 to Petefish which states "The dielectric layers are preferably made of an organic material" (see column 3, lines 38-39); and in the article published by Chip Scale Review, January – February 2000, titled "Flex Tape Use for Area-Array Substrates Will Grow Rapidly" (see internet link address: <http://www.chipscalereview.com/archives/ES/issues/0100/flex3.html>) wherein the article states "Flexible organic substrates are generally referred to as 'flex tape' and offer superior thermal and electrical performance over thicker substrates. This tape is generally, but not necessarily, made using polyimide as the dielectric material."

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Kosugi (5500556).

Kosugi anticipates a multilayer microwave or mm-wave circuit comprising: a first metallization layer (11_m), at least a portion of said first metallization layer adapted for operation at a frequency ranging from 20 GHz to 100 GHz; a second metallization layer

Art Unit: 2829

(12_{m2}), at least a portion of said second metallization layer adapted for operation as a ground plane; a dielectric substrate layer (flexible organic material), said dielectric substrate layer disposed between said first and second metallization layers; and a plurality of conductive vias (5_m, 6_m) extending through said dielectric substrate layer and electrically connecting portions of said first and second metallization layers, said multilayer microwave or mm-wave circuit being a flexible circuit (col 3, ln 13-36); as recited in claim 1.

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Art Unit: 2829

6. Claims 2-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kosugi (5500556).

Kosugi shows a multilayer microwave or mm-wave circuit comprising: a first metallized polymer layer (11_m) comprising (a) a first polymer layer having a thickness of less than 50 microns and (b) a first metallization layer (12_{m1}) disposed on said first polymer layer, at least a portion of said first metallization layer being adapted for operation at a frequency ranging from 20 GHz to 100 GHz; a second metallized polymer layer (12_{m2}) comprising (a) a second polymer layer having a thickness of less than 50 microns and (b) a second metallization layer disposed on said second polymer layer, at least a portion of said second metallization layer being adapted for operation as a ground plane; a dielectric substrate layer (flexible organic material) disposed between said first metallized polymer layer and said second metallized polymer layer; and a plurality of conductive vias (5_m, 6_m) extending through said dielectric substrate layer and electrically connecting portions of said first and second metallization layers, said multilayer microwave or mm-wave circuit being a flexible circuit; (col 3, ln 13-36); as described in claim 5.

As to claim 10, further comprising circuit components (1, 4) disposed on said first metallization layer, said circuit components selected from discrete semiconductor components and integrated circuit chips is shown.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have further limited the invention as described in claims 2-7, 13, 17, 19 and 22 because these claims demonstrate limiting conditions which can be

Art Unit: 2829

determined by routine experimentation and are considered to be within the scope of the invention as disclosed in Kosugi. Moreover, the limitations of claims 8-12, 14-16, 18, 20 and 21 are considered inherent in the apparatus of Kosugi or are within the normal range of operating the apparatus of Kosugi.

7. Claims 23-43 continue to be allowable for the reasons made of record in the Office Action mailed on April 11, 2003.

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Quan (5631446) shows (Figures 4A-C) a multilayer microwave or mm-wave circuit comprising a first metallization layer, at least a portion of the first metallization layer adapted for operation at a frequency ranging from 20 GHz to 100 GHz, a second metallization layer, at least a portion of the second metallization layer adapted for operation as a ground plane, a dielectric substrate layer, the dielectric substrate layer disposed between the first and second metallization layers, and a plurality of conductive vias extending through the dielectric substrate layer and electrically connecting portions of the first and second metallization layers, the multilayer microwave or mm-wave circuit being a flexible circuit.

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

Art Unit: 2829

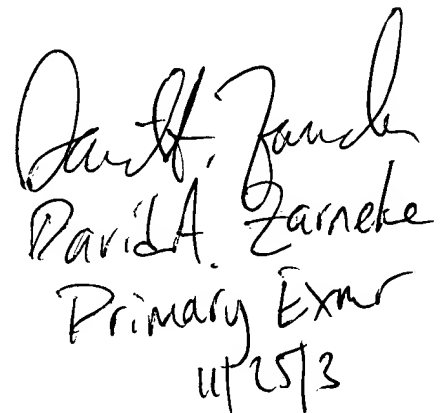
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Russell Kobert whose telephone number is (703) 308-5222.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0956.



Russell M. Kobert
Patent Examiner
Group Art Unit 2829
November 21, 2003



David A. Zarneke
Primary Examiner
11/25/03